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Monitoring Stratospheric Climate Change Using AMSU

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Abstract: Historically, satellite measurements of the stratospheric temperatures have been made by the Stratospheric Sounding Unit (SSU), an infrared sounder, and (for the lower stratosphere) channel 4 of the Microwave Sounding Unit. The follow-on instrument to MSU, the Advanced Microwave Sounding Unit (AMSU) monitors additional microwave channels that extend to the upper stratosphere, covering the range of heights measured by SSU. In order to continue to provide climate-quality monitoring of the stratosphere, these channels need to be investigated to ensure that they are stable enough for climate applications, and adjustments need to be made to account for changes in measurement time and any other sources of drift that are uncovered. It is important to continue to monitor stratospheric temperatures over the next decade because stratospheric ozone is expected to begin to recover, and to test future climate models, which are tending to include more features of the upper stratosphere and mesosphere in their analysis. We proposed to perform a detailed calibration of AMSU channels 10-14 for each AMSU instruments, and to construct a merged dataset containing data from all AMSU instruments that are determined to provide high quality data. Once constructed, these data sets will be made available to the scientific community via the World Wide Web.